FERMILAB
ENGINEERING NOTE

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SUBJECT

NAME: PETER DE VERE

DATE: 08-16-95 REVISION DATE:

NUMBER: MSD 008 E831 DATE: 08/16/95

TITLE: Support Structure for 7 Aluminum Beams and Trolley Rail Extrusion.

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KEY WORDS: Design, Support Structure, E-831, Scintillator Arrays, Aluminum I-Beams, Aluminum Trolley Rail-Guide.

ABSTRACT / SUMMARY:

Design of steel support structure to replace "hanger-support" connected to Channel of Cat-Walk. This Design is a direct response to Engineering note MSD EN-007 - E831; De-rating Live Load Capacity of Cat-Walk due to load imposed by "hanger-support."

The column and beam sizes were established by assuming that the heaviest Scintillator Array used in future experiments will be 2400. lbs.; (1600. lbs plus 800. lbs for instrumentation wire).

Two Beam-types are evaluated; W6X25 and Structural Tubes 6X4 for each wall-thickness in the ASD Manual; 3/16 to 1/2 inch. Fabrication details for each shape is also presented in Section C. Presenting two beam-shapes allows for fabrication shop-preference and market availability at time of material purchase.

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Two locations for the support columns were investigated (see Section C). Location "2" was chosen because the column-location allows passage of the "scissors-table" used by technicians to install and maintain hardware.

4 X 4 inch Tubular Columns were analized for the calculated design loads. The capacity of each wall thickness, 3/16 to 1/2 inch, was calculated and presented in Sectoin C. The purpose of listing a range of sizes is stated above.

The design details require prior fabrication and fitting outside of the Wide Band Lab using bolted-construction with a minimum amount of welding. Installation of each column and the support beam inside the Wide Band Lab requires bolted construction only.